

22, 1862

SUPPLEMENT.

The Mining Journal,  
RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

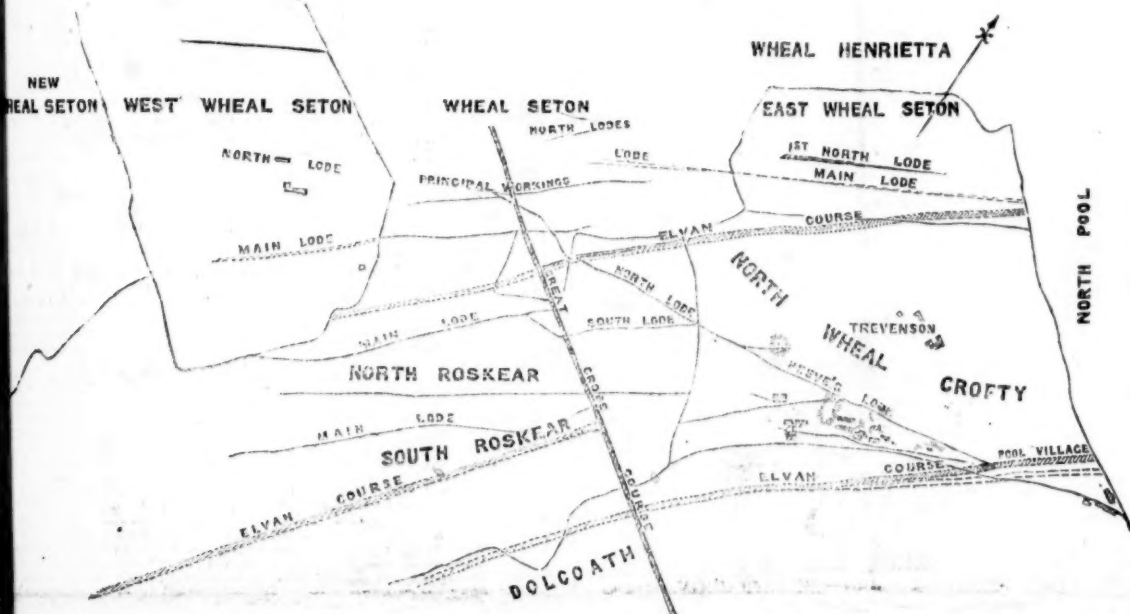
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LONDON, SATURDAY, FEBRUARY 22, 1862.

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PLAN OF THE SETON DISTRICT.

MAP SHOWING THE RELATIVE POSITION OF THE SETON MINES, AND OTHERS ADJOINING.



EAST WHEAL SETON.

This ground has lately been attracting a great deal of attention on account of the highly favourable position which it occupies in reference to the surrounding mines; and it certainly seems difficult to point out any mining and in Cornwall remaining unwrought which possesses such advantages in this respect, being bounded on the west by Wheal Seton, on the north by North Pool, and on the south by North Crofty, all of which mines produced large masses of copper ore at very shallow levels, and given at profits.

The lodes are those of Wheal Seton, West Seton, and North Pool, and the elvan course, or porphyritic dyke, runs through the entire length of the district. This elvan course is very near the main lode, in the eastern part of the district, and diverges from it slightly in going west, but will form a junction with it at a depth varying from about 30 to 60 fms., through the greater part of the ground; and at the eastern extremity the junction would appear to be very near the surface. These facts are of the greatest importance, as indications of a rich formation of copper at a shallow level; for in the district in which this mine is situated, and which has one of the richest in copper and tin yet explored, the numerous mines which great profits have been derived have all possessed the features referred to, and been found to produce the largest quantities of metals, but particularly copper, at and above the line of junction of the lodes with the elvan courses. The practical miner is frequently asked how this fact is accounted for? but to this no satisfactory reply has yet been elicited. It certainly seems, however, that the elvan rock is in some way the cause of the deposition of the copper in that part of the lode which comes in contact with it. The country rock through which the elvans, as well as the lodes, pass is in this mine, and the greater part of the others which have the largest profits, clay-slate, or, according to the Cornish miners' nomenclature, killas; and it may be that the presence of two rocks of totally different characters about the mineral vein or lode may be favourable to metallic action, such galvanic action being probably the active agent in the deposition of the large masses of metal which are found in such situations. Nature appears to have been engaged for ages in abstracting a slow process from the surrounding rocks, and concentrating in the houses called lodes for the use of man.

Whether this theory be correct or not, however, it is a fact that in North Pool, which bounds this mine on the south, and which is traversed by the lodes, and a parallel elvan course, the large course of copper ore which the profits were made when the mine was called East Crofty, and from within a few fathoms of the surface to a much greater depth, depending with the line of junction of the lode and elvan. This was the case in the Old South Roskear Mine, which gave immense profits of 20,000l. having been divided before the erection of any machinery, the lode and elvan taking place in the eastern part of the mine, close to the surface, and dipping in going west precisely as it does in the Seton.

These are examples amongst numerous others in the immediate neighbourhood of East Seton, showing, by analogy, what may be reasonably expected by exploring the ground to which attention is now directed. It is, however, mentioned as being still more important that the lodes in this mine are those of the Setons, adjoining to the west; that the elvan is also that which traverses those mines, coming in contact with the lodes, and probably being the cause, in accordance with the theory referred to, of their great productiveness. In North Pool also, which is on the east, the copper ore occurred above and about the line of junction of the lode with the elvan. In fact, as before stated, this forms a rule without exception in the rich district in which this mine is situated. Under such circumstances it would seem unaccountable that East Seton should have remained to the present day virgin ground; but the explanation of this is that for many years it formed a part of East Crofty (now North Crofty), and that such rich discoveries were made there soon after commencing operations in the south part of the mine, that it was diverted from the north part of the sett, now called East Seton, and it remained completely neglected. Wheal Seton had not at the time turned out so rich as it has since been, and West Seton was in the same state, so that the evidences which these celebrated mines now afford of the importance and value of the ground in question were then wanting.

The North Crofty Company drove an adit into the western extremity of the ground when it formed a part of their mine, and since the two mines have been separated the owners of East Seton have continued the adit eastward, with the view of exploring the lode near its junction with the elvan. This adit is rather over 20 fms. deep, and will be still deeper in the eastern part of the sett, as the ground rises in that direction. Discoveries of the greatest importance and value will be in all probability made by driving this adit eastward, as it approximates the elvan course. The adit is also being driven north on a cross-course towards another of the Seton lodes, which will be intersected in about two months, and it is thought by practical miners that this operation is also likely to lead to a good discovery. Any improvement met with at either of the points referred to will be certain from the position of the mine, bounded as it is by others which have given large profits, and traversed by the Seton lodes, to occasion a great demand for shares, and give them a high market value. At present, however, the shares can be obtained at a price which, when compared with the merits of the ground, and the chances of a great success which it offers, as well as with the market value of the other mines forming with it the Seton range, may be said to be merely nominal, and not to represent in the slightest degree the real value of the property; but the attention of the mining public has never been drawn to this ground, or its many favourable features pointed out, and its present low market value is, therefore, accounted for. There are 5610 shares, and whilst the operations which have been referred to are being carried out no apprehension need be entertained as to the frequency or heavy amounts of the calls, as they will not exceed 1s. per share quarterly; and on such discoveries being made as will lead to the erection of a steam pumping-engine, a call of 10s. per share will be ample to provide a suitable machine, and put it in complete order for working.

The accompanying map shows the position of the several mines forming the Seton group, as well as some others in the same locality; and the position and direction of some of their most productive lodes. It also shows the elvan courses, and as these have an important effect on the metalliferous lodes, rendering them productive at and about the points of contact, a few particulars respecting them will not be irrelevant, and may be interesting. The elvans have a horizontal course more to the north of east and south of west than the lodes, and in depth have an invariable northern dip, and a much greater underlay, or declination from the vertical, than any of the lodes. The lodes, therefore, come into contact with them not only in their horizontal course, but also in depth; and in going west from any point of junction of a lode and an elvan the line of contact will, from the different bearings and underlay of the two, become regularly deeper. Some of the largest courses of copper ore which have been discovered in this district have, therefore, been met with first very near the surface, from which point they have had a regular western dip, corresponding exactly with the line at which the lode meets and passes through the elvan.

The elvan courses are much larger than the lodes, being several fathoms in width, whilst that of the lodes varies from a few inches to 10 or 12 ft. There are one or two instances, however, of lodes being over 20 ft. wide, the whole of which was rich copper pyrites. The elvan rock is a description of porphyry, being composed principally of felspar and quartz, in a compact mass, in which are embedded irregularly crystals of felspar. The stone is hard, and at the outcrop extensively quarried for building purposes, nearly the whole of the town of Camborne, and the village of Tuckingmill, which are near the mines referred to, being built of it. The elvan course, which passes through the whole of the Setons, is at the outcrop softer, and better adapted for architectural purposes than the other elvans in the same locality, and there is a handsome church built of it in Tuckingmill. It is, however, of much greater importance to the miner to notice that it exercises the same beneficial influence on the lodes with which it comes in contact, the great courses of copper ore in Wheal Seton and West Seton being met with in its neighbourhood. Lodes pass through elvans as through granite, killas, or any other description of rock, without being diverted from their courses, or dislocated, as by cross-courses, and in them and about them are generally found to be richer in metals than in other parts.

[In next week's Journal there will be a further account given of this rich district, with some particulars relating to several of the best mines in the midst of which East Seton is situated.]

ON THE RELATIVE MERITS OF THE DIFFERENT SYSTEMS OF WORKING METALLIC MINES AND COLLIERIES.

BY H. C. SALMON, F.G.S., F.C.S.

The relation between the industrial and political greatness of these islands and their mineral resources is too evident to require pointing out. Without our coal and iron, our copper, lead, and tin, our present industrial position would have been unattainable by any amount of skill or enterprise. Among the mineral resources of Great Britain coal and iron occupy by far the most important position, their value (estimating the coal at its price at the pit's mouth, and the iron as pig-iron) having been, in 1860, nearly seven and a half times as great as that of the produce of all the metallic minerals put together, estimating this metallic produce at its value after being smelted. The exact values were:—Coal, 20,010,674l.; pig-iron, 12,703,950l.; total value of coal and iron, 32,714,624l. Value of metals produced from metallic minerals 4,406,694l., including copper, tin, lead, zinc, silver, and other miscellaneous metalliferous products. But, although the produce of our metalliferous mines seems small in comparison with that of our great coal and iron districts, it is not only still considerable in itself, but its value to the industry and trade of the country is even greater than appears from the figures at first sight. The annual out-turn of metalliferous minerals, producing metals to the value of four millions and a half, is not only a direct addition to the wealth of the country to that extent, but, coupled with our other mineral resources, it has had the effect of making this country the great centre of certain branches of metallurgical industry—a metallurgical metropolis, so to speak, to which ores are sent from every quarter of the globe, upon which our commercial and metallurgical industry realise their due profits. In taking a brief review of the systems of working by which these great sinews of British industry are discovered and wrought, so as to be available for our use, which I propose doing this evening, I need scarcely say that I shall studiously avoid details, and confine myself, as nearly as possible, to giving a popular exposition of the general principles upon which the practical working of metallic mines and collieries is carried out, so far as the time at my disposal will permit me to do. In comparing the modes of working metallic mines and collieries, it is necessary, in the first place, to consider the main distinguishing conditions under which the mineral deposits occur in either case. It will be sufficient, for my present purpose, to refer to two of these. The first, as to the position, with reference to their containing rocks, of the lodes or beds in which occur the mineral sought; and the second, as to the distribution of the minerals in the lodes or beds. Now, as to the first point, the position of the lodes or beds, with reference to their containing rocks, it may be laid down as a statement of a general fact, in this country at least, that the combustible minerals occur in beds approximately horizontal, interspersed with other beds, while the metalliferous minerals occur in lodes generally vertical, or inclined at a considerable angle to the horizon, usually cutting through the rocks which they traverse. Beds of coal and its allied minerals are, in fact, sedimentary deposits contemporary with their containing rocks, while metallic lodes are of an origin long subsequent to their containing rocks, and are due to causes which science has yet failed to elucidate. I need scarcely say that, in stating that deposits of combustible minerals usually occur in beds approximately horizontal, and the metalliferous minerals, on the contrary, in lodes more or less vertical, I only profess to give a popular notion of their common mode of occurrence in this country. In numerous localities, particularly on the Continent, beds of coal are thrown, by the contortions of the strata, into positions more or less vertical, and metalliferous deposits, on the other hand, sometimes take a position nearly horizontal, and even, at times, are found in beds intersected with their containing rock.

The second distinguishing condition—that is, the difference in which the minerals sought for are distributed in their beds or lodes—in the case of coal and the metalliferous ores is even still more characteristic than the first, for it is connected with their geological origin. The combustible mineral, being of sedimentary origin, partakes of the comparative regularity of such deposits. The metalliferous ores, on the other hand, having been introduced into the rocks long subsequent to their formation by the operation of geological causes, highly obscure, and, probably, equally complicated, usually occur with an irregularity which has hitherto defied the ingenuity of man to reduce to any general laws, and which has rendered this class of mining so eminently speculative. This distinguishing condition of comparative regularity in the one class of mining contrasted with the widest capriciousness of distribution in the other class, stamps the mode of working to be adopted in either case with distinctive features, which must be always borne in mind if we wish candidly to compare the respective merits of the two systems. In metallic mines, where the deposits of valuable ores occur so irregularly—but which, when found, are so valuable—the primary object is research. The removal, in the most economical manner, and with the least waste, of the ore discovered is, an important consideration; but it is decidedly secondary to the proper prosecution of works of discovery. In collieries, on the other hand, works of research are of secondary importance, the primary object being the economical and safe removal of as large a proportion as possible of the coal, the quantity of which is approximately known in most districts. Having a pretty large acquaintance with the various mining districts of the United Kingdom, and of some foreign countries, I have been greatly struck with the very different type of character which is required for successfully carrying out, metallic mining and colliery mining. In the one case the essential problems to be solved are geological; in the other they are mechanical and engineering. The true metallic miner acquires, by constant practice, coupled frequently with a certain natural aptitude, an instinct—for it really is but little else, being indescribable and undefinable—for the search for metallic ores, which has a value beyond all price. The possession of this acquisition is quite compatible with a general confusion of ideas on any other subject; and, in fact, it is not unfrequently developed in the highest degree in men who possess anything but clear minds—who, indeed, are quite incapable of sustained reasoning. In many mining districts I have observed two types of men, the result of whose career has been very different from what a cursory observer might expect. The one would be a man of large mind, considerable abilities, and an accurate reasoner—such a man would be an excellent engineer and a good man of business; his works, under and over ground, would be laid out skillfully and economically, and the cost of everything would be known to a fraction; yet this man, through a long life of industry, would be decidedly unsuccessful in mining. The other would be a man of a confused mind, rarely capable of giving a reason for what he did; an engineer and a muddling man of business. The mechanical appliances and arrangements in the mine and at surface would be badly and wastefully laid out; and as to knowing the cost of the respective operations, you would generally find that the notion of estimating them had never entered into his head; yet this man shall be successful where the other failed—the reason being that he possessed that peculiar mining instinct which the other, notwithstanding his superior general ability, was deficient in. The want of a clear mind, and the absence of business capacity and engineering skill are, no doubt, drawbacks, but they are trifles in comparison with the possession of that undefinable knowledge which will enable one man to discover rich bunches of ores where the chances are the other will wholly fail. In prosperous metallic mines the courses of ore are so rich, when found, that even a considerable percentage of cost in breaking the ore and bringing it to surface is not so very material. The great point is to find the ore, and the man who can do that best is fittest to manage a metallic mine, even if, in making the ore available for use, he should expend 50 per cent. more than another. These reasons, the force of which are not, I think, generally appreciated, coupled with the great uncertainty and irregularity of all metalliferous deposits, will, I believe, always render metallic mining inferior in its mechanical dispositions to colliery mining. Except in some extraordinary exceptional cases, it is very rare indeed that we can see our way for more than five years. An extensive mining sett may, of course, be worked successfully for scores of years, but this will generally be by a series of new discoveries, each usually requiring distinct working appliances. Consequently, as mining is a business, pursued for the purpose of making money, prudent men hesitate to incur large expenses or outlays of capital for the object of making a small saving on the working of a deposit of ore, which may itself disappear in the course of a few months.

UNDERGROUND WORKING OF MINES.—The systems of working underground in metallic mines and collieries thus depend upon two principal causes—the angle which the beds or veins make with the horizon, and the regularity or otherwise of their mineral contents. Indeed, the latter condition is of very general application, for all mineral deposits may be classed, for the purpose of working, according to the amount of sterile or gangue matter they contain, which may be used for the purpose of filling up, to some extent, the excavations made by workings, so as to support their walls or roofs. In the case of metallic mines, the proportion of this sterile matter is generally sufficient, with the aid of a certain proportion of timber, to secure the walls of the lodes sufficiently, particularly when the dip or underlie of the lode is such as to aid their standing. In the case of collieries, where the bed of coal is generally nearly horizontal, and where, besides, it consists wholly of valuable mineral, any attempt to remove the whole, or even a great portion of it, must be accompanied by a fall of the roof. Consequently, the difficulty of working collieries, so as to secure a considerable proportion of the coal, and at the same time to avoid accidents, to keep the works open, and not to prejudice the working of other parallel seams, is much greater than those unacquainted with the subject would be apt to suppose. Indeed, in the whole range of the art of mining there is no problem so difficult, and certainly none more important. Controversies have raged on the subject,



MR. PETER WATSON (being received with loud cheers) said it afforded him great satisfaction, in not only being here to-day and presiding, but also being permitted to stamp—  
many old friends on such an occasion as the starting the steam engine of the Wheat Gyrils, for it would be in the recollection of the present that it was only two years ago that on that mine, at that when it was resolved to start the pumping-engine, and sink below the adit level, he was the largest shareholder in all the machinery had been contracted for by himself, at considerable expense of his company. He had the satisfaction of knowing that all his time and attention had been crowned with success for himself and the shareholders, because his stock was well appreciated, and he felt convinced in the course of a few months, when the drawing



completed, the calciner erected, &c., that Wheel Grylls would "tell her own tale." The 20-inch cylinder-engine which has been standing that day, and he had christened it "Georgia" stamping-engine, was to him a very pleasant object on the company's side, and was equal in every respect to all requirements. With respect to the mine, he need not say that all who had seen it had spoken well of it, and out of all the reports, some short time ago sent to look at it, not one word had been published about it; for a very good reason—they could not consistently do so. Besides, it is perfectly absurd to think that a captain of a mine, miles away perhaps, can come here and inspect this extensive concern in four or five hours, and go away and write a report by some day's post, perhaps. Another thing I may mention here—that when any discovery or slight improvement takes place it is not telegraphed up to London, to unduly excite the price of shares. Much had been said of the advantages of the telegraph, but as far as mining was concerned, it was a great evil. Supposing, for instance, that Capt. Rogers had "wired" them the lode was worth 3000l. per fathom. The value would have risen in value on the market, perhaps, 20,000l.; a few days after he had "wired" the lode was worth 80l. a fathom, and the consequence would have been a fall; both telegrams would have been true, but the evil of sending them! Great care do not take place so rapidly as to necessitate flashes of lightning to communicate news. I always have, and always will, look with suspicion on telegrams. I thank you for your kindness in drinking my health, and trust to merit your kindly feelings. I sit down I will propose the health of the "Mayor of Marazion"—a gentleman, in honour of the fact, who has worked his way from the bottom to the top of the ladder, out of his mining success he is now one of the largest tin smelters in Cornwall. "The son of Mr. B. Michell." (Cheers.)

Mr. MICHELL begged to thank the Chairman and friends for drinking his health. When the toast was carried out legitimately he did not know a better investment. He had done it, and from his heart he wished prosperity to every shareholder in Wheel Grylls, and hoped and fully expected ere long they would receive good dividends.

The CHAIRMAN—I beg most cordially to give you "The V. Visitors," including my friend Harris, who, I understand, is now in this part, arranging to put Old Wheel Neptune to rest. I have known him many years, and can bear testimony to his untiring zeal and practical ability. I have known him manage the management of some large mines, and if he can put Old Wheel Neptune, you may rest certain he will carry the matter to a successful issue. He will be particularly fortunate in obtaining the mine. I don't believe a better mine exists. I have particular pleasure in proposing his health. (Great applause.)

Mr. HARRIS thanked his friend, Mr. Watson, for speaking of him in so kind and flattering a manner; he hoped he had deserved it, and would do his best to retain so good a character. From the cordial and liberal manner he had been received by the several shareholders, he believed within six months they would see their rich neighbour, Old Wheel Neptune, again in the Ticking List. That was much pleased in walking over the floors of the extensive set of Wheel Grylls that day; it was not many mines that could show piles of tinstant ready for the stamps; it was pleasing to hear the agents speak with confidence they did, it assured well for the mine. With permission of the Chairman, he proposed "The Working Miner." (Great cheering.) Much had been said, deservedly so, about agents and capitalists, but without the bone and muscle what good could they do? They were really and truly the foundation of our greatness. He had much to do with them as well as with artisans in other countries, and had no hesitation in saying that the miners were equal to any other class for intelligence, they were also husbands and affectionate fathers; and he trusted the day was not far distant when an institution would be erected to receive them when past labour, instead of the English "Workhouses." The men who contributed 32,000,000l. a year to this country were worthy of it; he had much pleasure in giving "The Working Miner," and spoke of the many difficulties and dangers underground, and generally of the noble character of miners.—The Chairman responded.

The CHAIRMAN—I beg to give you the health of "Messrs. Eustace and Son, our engineers." We have seen the engine go off to-day in splendid style, with no hitch whatever; it has been, I think, a credit to all concerned.

Mr. EUSTACE was pleased to think the engine had gone to work so creditably; it was able of driving 100 heads, and I trust it will be a fortune to the shareholders. He went to thank the Chairman and those present for the honour they had done him.

The CHAIRMAN—I beg to give you the health of "Mr. Gietter." I was in hopes we were for many years, he was one of the lords of not only Wheel Grylls but also of the mine. He has a large interest as lord of the manor in the success of many mines in this district, and I am happy to say that I find to-day he is fully alive to the necessity of treating adventurers liberally, and as they ought to be treated.

Mr. GIETTER responded. He was quite sure Mr. Trevelyan would have been with them if he had been in the district. He (Mr. Trevelyan) was desirous of doing all he could to further legitimate mining. He begged to thank them for Mr. Trevelyan.

Mr. HILL had a toast he would like to give—"The Lords of the Minerals in that district," coupled with the name of Mr. John Lally. He had known that gentleman and his friends for many years, and he was one of the lords of not only Wheel Grylls but also of the mine. From his knowledge, Wheel Neptune was shut up entirely from a noble estate; it is a very good mine. I have at the service of Mr. Harris all the best of my knowledge, and the enormous profits returned. When worked again it will be a success.—Mr. JOHN LALLY returned thanks.

The CHAIRMAN gave "The Absent Shareholders," after which the meeting became confidential.

## MINING IN AUSTRALASIA—MONTHLY SUMMARY.

MELBOURNE, DEC. 25.—During the past month we have experienced a fall of the rush to New Zealand, through the accounts from Otago of auriferous gullies having been found to yield large returns, the only brought down by escort having exceeded 162,480 ozs. gold, with quantities being left in the hands of the diggers. The general tone of the accounts from our own gold fields is of a satisfactory character, and sort which reached town on Dec. 6 exhibited an increase of nearly 3000 ounces, as compared with the corresponding one of the preceding year. The mining surveyor's report for the month of October gave the following statistics:—The total population of all persons upon the gold fields during that month was 236,625; of these 107,058 were engaged in mining pursuits—namely, 91,040 in alluvial and 16,018 in quartz mining. In quartz mining only 70 Chinamen are engaged, whilst in alluvial there are 20 employed. The proportion of Chinese to Europeans is as follows:—Chinese, 27,700; Europeans, 81,358. The entire population is thus distributed amongst the several gold fields:—Ballarat, 57,563; Beechworth, 25,794; Sandhurst, 28,501; Maryborough, 52,808; Melbourne, 46,799; and Ararat, 26,160. At Ballarat the mining population is 17,724; Beechworth, 16,968; at Sandhurst, 11,892; at Maryborough, 29,658; at Castlemaine, 16; and at Ararat, 14,180. On the several diggings there are employed 3874 puddling machines, 464 whirles and pulleys, 166 whips, 24 pumps, 183 sluices and toms, 121 wheels, and 19 hydraulic hoses. In quartz mining there are employed 452 steamers, with 7446 aggregate horse-power, 54 other crushing machines, 188 whirles and 22 water-wheels, 5 derricks, and 14 whips. The total approximate value of all gold produced is 1,407,474l., which is thus distributed:—Ballarat, 494,300l.; Beechworth, 273,100l.; Sandhurst, 273,100l.; Maryborough, 170,776l.; Castlemaine, 249,453l.; and Ararat, 67,900l. The total number of square miles of ground actually worked upon is 14,900. Comparing these returns for the month of the preceding year, we find an increase in the total population of the gold fields of 4975, and in the number of miners employed of 2604. The Barkley rush is progressing very satisfactorily, and the more favourable opinions are now formed relative to its permanency than at first the case. On Dec. 6, on the deep lead, a hole was bottomed on gold nearly 1/2 mile of the last payable claim. This discovery has given a great impetus to mining, and in a great number of instances shepherding between the two points has placed to sinking. The lead is now being worked profitably, three claims wide; and that the sinking has become deeper, it is said that the series of patches, which all that sink at first struck, have given place to a well-defined lead. From the nature of the country through which the lead is running, it is anticipated that it will be traced for some miles. One of the best holes sunk gave 1 1/2 oz. of gold in the 30 fms. The shallow ground is now getting patchy, but a great deal of gold is still being obtained from it, and a large number of miners are profitably employed there. The Christo Reef, Redbank, still maintains its high reputation. The last crushing of this reef, which consisted of 2 tons 12 cwt. of stone, taken from the prospector's claim, yielded 8 1/2 ozs. There is but little change to report in the Ballarat district. Several claims on the deep leads are, for the most part, doing well, and in some instances splendid returns are being realised. The reports from the reefs at Morse's Creek and the Ovens district, and although no new leads have been lately opened, yet the miners in the Ovens district are generally speaking, to be doing well. Amongst the late crushings may be mentioned 150 tons from Young Faulkner's which yielded 2 1/2 ozs. to the ton; and another lot from the Rose, Shamrock, and Co., which yielded 1 1/2 oz. to the ton.

The International Exhibition one of the most conspicuous objects in the Australian field is the gilded pyramid, 40 1/2 ft. high and 10 ft. square at the base, which has been designed to help us by means of a sensible image to form some conception of the quantity of gold (8000 tons) extracted from the Victorian fields since 1851. The faces of the pyramid are studded with the names of the several colonies, and the most valuable of which is the value of the gold just mentioned—104,650,000l. The Cluney send blocks of quartz, and a battery of 12 heads of the press, the latter beautifully constructed of native woods. Mr. Knight is constructing an artificial mine, showing the character of the reefs, and also of the alluvial workings. The metals and minerals which the colony will make a very good figure: the alluvial nuggets and auriferous sands attract the many; but, besides these, antimony, iron ore, lignite, coal, kaolin, salt, limestone, tin ore, marble, granite, gypsum, and blue and green carbonate of lime, will be thought worth the attention of the man of science.

C. LEICESTER, Consulting Mining Engineer.

ADELAIDE, DEC. 26.—The South Australian Mining Association have decided the price of copper to 93l. 10s. per ton at Port Adelaide. Coals are being freely forwarded from Newcastle, New South Wales, and there is no restriction in prices.

The furnaces of the new smelting-works, just completed by the English Australian Copper Company at Port Adelaide were lit on Nov. 2. At the time of the lighting, the company's manager, applied the direct fire to the No. 1 furnace, and the space of the visitors set light to the other six furnaces and to the refinery. The space of two minutes the smoke began to issue from the top of the immense chimneys which the company cheered lustily. The present building is only a commencement of what is intended to be done at a future day. It is contemplated to erect other buildings of similar dimensions, and in the building of the present house process have been made for the additions. The smoke from the furnaces is conveyed by a tunnel passing beneath and leading to an immense chimney stack, the size of which renders it a conspicuous object from all parts of the plains and for many miles at sea. It is 161 ft. in height, 21 ft. square on a level with the ground, and 8 ft. square at the top. It is built on a foundation of concrete, 41 ft. square, surrounded by sheet piling deep into the ground. There have been 600 tons of concrete used in the foundation. The first 12 ft. is built of stone, of which 171 cubic yards were consumed, and the remainder of bricks: red bricks being used for the exterior, with the exception of the interior of the fire-bricks. There is also a distinct chimney in the interior, entirely of fire-bricks, and in a large portion of the inside of the outer stack the bricks are used. It is estimated that nearly 300,000 bricks have been absorbed in the stack and the culvert connecting it with the tunnel. A large quantity of copper has been carried in trucks direct from the ship to the furnaces. In fact, the whole arrangement is so carried out, that nothing appears wanting to accelerate the carrying on of the works; and there cannot be a doubt but Port Adelaide, as well as the company, will be benefited by the establishment of the works.

The South Australian Register says—"We have seen some very fine specimens of silver-lead ore from the Eclair Mine, in the Mount Barker district, some of

which were found to contain 100 ozs. of silver to the ton. The mine belongs to Mr. F. C. Singleton, who purposes taking the specimens to England.

## AUSTRALIAN MINES.

THE BURRA BURRA MINES are progressing favourably, although the number of hands has been considerably reduced in consequence of the large demand for mining labour in the Wallaroo and northern districts. The 47th dividend (of 5l. per share) was paid to the shareholders at the beginning of the present month.

KAPUNDA.—The September ores were 295 tons of 16 per cent. average produce, equal to 47 1/2 tons of copper. The October ores were 214 tons of 17 1/2 per cent. average produce, equal to 38 tons of copper; and the November ores were estimated at 420 tons, and 25 tons of low class sulphate ores, for admixture in smelting. Copper made in October was 40 tons 13 cwt. 2 qrs. 2 lbs., and in November the quantity made was 58 tons 17 cwt. 2 qrs. 16 lbs. The shipments of copper ore now advised are 42 tons 12 cwt. 2 qrs. 21 lbs. per Blackwall, 15 tons 11 cwt. 2 qrs. 21 lbs. per Irene, and 7 tons 12 cwt. 2 qrs. 27 lbs. per Murray. The workings have been in some measure interfered with in consequence of a portion of the ground having fallen in. A new engine-house has, however, been erected, to which the machinery is now transferred. New machinery for the dressing of ores will also be erected shortly. It is understood that the productivity of the mine is undiminished.

GREAT NORTHERN (South Australia).—The local committee, under date of Adelaide, Dec. 26, state—"You will find the reports from Capt. Pascoe by this mail of a rather meagre character, which will be accounted for by the necessity of his absence from Nucleaena, and the preparatory operations requisite at that mine for the steam-engine having interfered with the regular mining works. The committee hope the erection of the engine, crushers, &c., will be completed in about two months, after which they look forward to being able to send you most favourable accounts of ore raising. In addition to the shipments of ore by the Rangoon and Austral (294 tons), there are now at Port Augusta 53 tons, for which the committee are seeking freight; and we hope by the time arrangements are completed for the arrivals from the mine will have made it a 100-ton parcel. We regret to say the Rangoon has had to discharge her cargo for repairs." Capt. Pascoe reports, under date Nucleaena, Dec. 19—"The 10th fathom level cross-cut end, driving from the shaft D, towards the engine-shaft, is in 7 fms. from the shaft D; we have 7 fms. further to drive to the new engine-shaft. This will be the water-course from the lode to the engine-shaft. We are again driving the deep lead east; the lode is 4 feet wide. Our returns of ore will not be great for shipment before our engine-shaft is down another level below our present bottom, and the levels extended on the lode and ore ground laid open."

NORTH RHINE (South Australia).—Capt. Barkla, under date Dec. 20, writes—"The men, in driving the 43, south of Cape's engine-shaft, on the course of the main lode, have cut a good lode of black sulphate ore, about 2 feet wide. It will yield about 4 tons to the fathom, and from 16 to 18 per cent. of fine copper. It appears that the men are driving the level just on the top of the ore, whereas the lode is much larger going down in the bottom of the level than it is in the back of the level, above which is every indication of abundance of ore below at the 60, so I have not the least doubt when the level is driven south under the above ore, but that the miners will be able to raise any quantity of ore whatever in the back of the above level. There are now about 10 tons of ore at surface." The local committee, under date Dec. 26, state—"We have just received samples of ore from the mine, with a note from Capt. Barkla, mentioning that the men driving the 43, south of Cape's engine-shaft, on the main lode, have cut the lode. Result of assay, 38 per cent. of pure copper. We are happy in being able to close this with such satisfactory news."

At the BREMER MINE, the property of the Worthing Company, they have raised about 140 tons of ore during the month, and have forwarded from the mine from 40 to 50 tons of regulus. This mine is keeping one regulus furnace constantly at work. The fire-bricks are made on the spot, and are considered superior to English.

WHEEL ELLER.—Shipment of 234 pigs of silver-lead had been made per Westburn, and the loss of the Livingston with 20 tons is reported, the value being covered by insurance. The number of hands working has been reduced, the directors having determined to limit their operations until the engine-pumpwork is erected, and they can resume working upon the richer ores and large deposits which are lying at the lower levels of the mine, and which are not available until the water can be pumped out.

ENGLISH AND AUSTRALIAN COPPER.—The smelting operations both at Koorina and at the New Port works were proceeding vigorously, and they were able to smelt the whole of the ores delivered by the Burra Burra Company. Four furnaces and one refinery were at work at Koorina, and seven furnaces and one refinery at the Port works.

YUDANAMUTANA (South Australia).—The following are extracts from letters from mining capitalists in the colony who have visited the mines:—"One, under date Nov. 15, 1861, describes the nature of the locality, and says the formation 'is granite and clay-slate jointed.' The granite is sometimes ferruginous and sometimes felspar, and sometimes phosphatic. The clay-slate for miles on each side of the granite is generally white, and in other places drab, as good for mining as the world can produce. The granite ranges are east and west, and send out their elvans courses north and south, as seen in Cornwall and Devon. Between the elvans the copper is found."—"There is a new mine taken out called the Yudanamutana. There is a large course of ore there, more than I have seen in all the mines put together at the surface. I think 1000 tons could be raised per month."—"Another, dated Nov. 22, remarks—"The Yudanamutana Mine looks most magnificent, and Capt. James states that he can get another 100 tons of ore as easily as this first lot was obtained; indeed, it is hardly to be seen that any has been taken away, which can easily be imagined when he was quarrying upon a course of 20 feet wide, and which can be seen on the surface, more or less, for a distance of 270 yards."—"Again, under date of Adelaide, Dec. 22, a captain writes:—"Everyone who has inspected the Yudanamutana confirms it as the monster mine of the North."—"Sixty tons of rich ore from this remarkable mine have been advised as shipped from Port Augusta, and a further parcel remains there for transmission to England."

PORT PHILLIP AND COLONIAL GOLD.—The quantity of quartz crushed in November was 3938 tons, yielding 1671 ozs. 15 dwts. 21 grs. of gold, or an average of 8 dwts. 10 grs. per ton. The amount received on Clunes account for the six weeks was 2984l. 7s. 9d.; payments, 2078l. 18s.; profit, 886l. 9s. 9d. The total outlay per ton was 10s. 6 1/2d., and, excluding the calcining and delivery account, 7s. 11 1/2d. A remittance of 1000l. has been received by this mail.

THE SCOTTISH AUSTRALIAN MINING COMPANY (Limited).—The directors have received advices from Sydney, dated the 21st December last, with reports from the Good Hope Mine, and also the Cadlaggullong (formerly called the Oakley Creek) Mine to the 16th of that month.

The operations which have been for some time going on at the Good Hope Mine, with a view to prove the lode at the depth of 30 fms., have resulted in success. The following are extracts from Capt. Perry's report, dated Dec. 14:—"Dickson's Shaft: It is with much pleasure that I announce to you our having, on the 5th inst., cut the lode in the 30 cross-cut, at about 12 1/2 fms. from the shaft. We have since penetrated the lode about 5 ft., and find it so far of a very favourable character. It is composed of a blue spar, and contains a large quantity of yellow sulphate of copper, with a little murex. The yield is estimated at about 5 tons of dressed ore, of (say) 10 per cent. to the cubic fathom." Mr. Morehead, the superintendent of the company, writes from the mine under date Dec. 16:—"It is my purpose to proceed from this across the country to Cadlaggullong. It was peculiarly satisfactory to us all to come upon the lode solid and well defined, and greatly improved as respects the character of its contents since it had been seen in the 13, at south shaft, at which depth it will be recollected it was driven into the extent of 13 ft., without the footwall being found. Of course we can form no idea of its thickness where we have now cut it; but the cross-cutting of it will be pressed on as quickly as possible. As, however, the lode is very hard, it may take some weeks to get through it, if it be as wide as we have reason to think. When it is cut through I shall probably arrange to have Capt. Johns to inspect it with Capt. Perry. No doubt the crusher and engine we have in Sydney are the very things that would answer here. It is very strong impression is that they will be more advantageously applied to the Cadlaggullong, and to settle this point is one of my objects in now visiting the last-named mine." It is, of course, need to certain that we shall require an engine and crusher for the Good Hope (which may now be considered a proved mine); but I would not yet recommend these to be ordered, as it appears to me desirable that we should drive through the lode first. It might, however, be well to ask Capt. Dalley to make enquiry at once with a view to ascertaining if good machinery, such as I have mentioned, could be picked up second-hand. This might save time. I am taking over samples of the ore from the 30, to be assayed by Mr. Christie."

From the Cadlaggullong Mine Capt. Christie reports as follows:—"The adit shaft, after sinking to a depth of 16 fms., was stopped, and the six men were set to cross-cut the lode south from the shaft, 6 ft. from the bottom; they are now in just 4 fms. The floor for the first few feet was poor, as we had purposely chosen a soft floor of killas, carrying but little ore, to commence at. When we had cut through this we had a rich floor of red oxide, a quantity of native copper, and a little malachite, and after that a rather hard grey composition, carrying a large proportion of yellow ore, and then a soft black iron ore, with yellow ore intermixed, and since then a floor about 20 in. thick, composed of a rich yellow ore, &c. All these floors appear to have greatly improved since we passed through them at the shaft, both in character and quality. We now judge their thickness to be 2 ft. 2 in. There is but little question that in depth they will all turn into good yellow ore. My last look at the lode at the bottom of the shaft was as satisfactory as ever." For the last three weeks we have no men engaged raising ore in the stope. I judge we have raised only 120 tons of ore for the month, nearly half of this was from the cross-cut and shaft, and the rest from the stope. Total raised to date about 720 tons.—Smelting Works: The stack is to its height, 75 feet, and the culvert is lined for a considerable distance. The superintendent states that his arrangements for carrying on the coal branch of the company's operations are such as to place the company in a position to fear no competition in the coal trade of New South Wales."

THE BON ACCORD MINE.—The mail just arrived from Australia has brought the advices from South Australia for November which failed to arrive in London last month, and also the usual advices for December last. In October last (as the proprietors were informed in December), Capt. Jeffrey having cut the wine lode in the 50 in a different state from what its character in the 40 had led him confidently to expect finding it—in fact, in the 50 split into several threads—proposed to drive head west and north on the lode a little farther, and also to sink on the lode a little below the 50, in order to ascertain, if possible, whether the lode had taken a great underlie westwards, or whether the threads into which it had split would reunite, and form a solid lode again at a greater depth. He also proposed to have the workings examined by other practical miners. These slight operations have been performed, and the examination has taken place (but not by the captains of the Burra Burra Mine, as it was hoped would be the case, the directors having refused to allow it), but have not resulted in finding the lode in a compact state, containing paying ore in quantity, although some black ore was come upon, both in sinking and driving north, which, on being assayed at Adelaide, yielded 9 1/2 per cent. of fine copper.

It is stated in Capt. Jeffrey's report of October 30—"The ground in the 50 west, across the lode from engine-shaft, is more favourable for driving, with a little murex; kindly looking ground for copper ore. In the 50 north, on the lode, the lode is looking more promising. I have broken some good stones of black ore in the bottom of this end to-day. It is the best that I have seen from this level as yet."

It is stated in the report of Messrs. Alfred Hallett and Sewall and Squary (the parties called in by the company to inspect the workings), under date Nov. 7 last—"The lode at the depth of 50 fms. has become contracted in width, as compared with what it was at 40 fms., being now from 4 to 5 ft. wide, and is better defined at the end than at any other part, having a clean white killas wall on the western side. The character of the lode has somewhat changed, being of a softer nature, composed of quartz, praz, and a very small quantity of ore; some of the quartz contains small specks of purple ore, similar to that found in the deeper workings of the Burra Mine (a new feature in the lode). About 2 fathoms from the end a small squat of black and yellow ore was passed through. As this ore is making under what appears to be a slide crossing the lode, we strongly advise sinking at once upon it as far as the water will allow, to ascertain whether it continues under the bottom of the level, or whether it is merely a squat or pocket."

The committee, finding that the black ore comes upon in the bottom of the 50, west from engine, was passed through in going down upon it in the course of 2 ft. sinking,

at the end of November suspended all operations for the present, and one of their number has come to England by this mail, and will confer with the directors as to what shall now be done. The Chairman of the committee thus writes—"The squat of black ore in the drive north had a very promising appearance, but the doubt that existed in the minds of the surveyors of its holding down has since proved to have been but too well founded. I set the men at once to sink on it, but in less than 2 ft. the ore worked out, and after sinking a few feet deeper the water prevented a continuance of the work. Under these circumstances, it then became necessary for us to decide either upon sinking the engine-shaft and driving at a deeper level, or at once to suspend operations until the directors were advised of the position of affairs. The committee, after very anxious deliberation, resolved to adopt the latter course, and I have now to advise that all works are for the present suspended at Bon Accord. Before stopping the engine the pitwork was thoroughly overhauled, so that no difficulty will arise in again forking the water when required. The engine, boilers, buildings, and all shafts and workings have been well secured, and all portable material placed within the yard and store."

"As I have before stated, I had the strongest possible faith in finding a paying mine at the 50 ft. level, seeing that the improvement in the lode in the 40 took place in such a favourable change of country, but the result of our drivings in that level has not only sorely disappointed me, but upset the groundwork of the theory upon which I based my faith. I can now only imagine that the lode in the 40 must have dipped to the east, as we were stopped by the water in sinking the winze on it from the 40 to the 50, and possibly the branches cut in the 50 drive may be altogether independent. The squat of black ore was not a large deposit, but it gave, on the rough, 9 1/2 per cent. without dressing, and had this continued on the lode we would have had a good paying mine. I should be very sorry to state as my belief that the Bon Accord cannot yet be made a paying mine; in fact, nothing that has yet occurred can drive me of the belief that ore is to be found on the property, and that in quantity; but it requires careful consideration and calculation as to the cost and the chances of eventually cutting it. The only positive loss that can accrue to the shareholders by the step now taken by the committee of management is a delay of a few months. The properties will be well protected at the expense, after Christmas, of the storekeeper's salary. I feel very great difficulty in the endeavour to advise the directors as to their future proceedings. I have, to the best of my ability, given a full and faithful account of all that has hitherto been done, and also of our present position. Very possibly the best thing, or, at least, one that would be most satisfactory to the shareholders, would be to send out an experienced practical mining agent to inspect and report before you come to any final conclusion. I would suggest that his duties should be confined to this, and that he should not have his judgment liable to be biased by prospects of subsequent employment in carrying out works that he might recommend. If the opinion should be adverse to continued explorations at Bon Accord, then it might be of advantage to the company to engage him to inspect other mineral properties in this quarter, with a view to make the most of the remaining capital and material now available and in our possession. Even with our present appliances (supposing the Bon Accord abandoned) we could enter the field under more favourable circumstances than the majority of local companies; but I do not consider it within the sphere of my duty to urge upon the company any particular course of action. By this mail we have valued upon you for 500l. through the Union Bank. This will suffice to take up all outstanding orders and accounts, pay fees and salaries, at the end of the year, and probably be the last demand we will make upon you until your further instructions are received. Although I have advised that the town establishments will be broken up at the end of the year, it will not be so de facto, but only as regards the attendant expenses."

NEW CORNWALL (SOUTH AUSTRALIA) MINERAL ASSOCIATION.—A splendid block of copper ore from the workings of this company at Wallaroo, on Yorke's Peninsula, has been shipped to England for the forthcoming International Exhibition; the block weighs about 5 tons, and is estimated to contain about 40 per cent. of copper. The New Cornwall Mineral Association is a colonial undertaking on the principle of liability principle, with a capital of 50,000l., in shares of 2l. each. Of the 25,000 shares, five are proprietors' shares and three-fifths working capital shares; with respect to the proprietors' shares, the very admirable arrangement has been made that the vendors shall receive them in proportion to the ore sold—they will be entitled to one-fourth upon the formation of the company; one-fourth when there has been 50 tons of ore sold; and the remainder when 5000l. worth of ore has been sold. The sections to be worked are immediately adjoining the celebrated Wallaroo, Bingo, and Wandilla Mines, and contain the same lodes; beyond this the promoters made no representations to induce capitalists to invest, yet the whole of the shares were speedily subscribed for, and the deposit and calls have been regularly paid. It will be remembered that Yorke's Peninsula is situated just opposite to Adelaide, but on the other side of the gulf. The New Cornwall Association held its first half-yearly meeting on Oct. 31, when 15s. per share had been paid upon the working capital share, and the accounts showed that, after payment of the various expenses to date, and making remittances to England for the necessary machinery, stores, &c., there remained a credit balance of 3563l. 13s. 9d. The directors' report was very satisfactory. In addition to the services of Capt. Nicholls, they have engaged Mr. John Tippet to superintend the erection of engines, buildings, &c., and the general management of the company's property.

AMALGAMATION.—The Age, in an article reviewing various contributions to the Melbourne Exhibition, passes on to speak of some specimens of gold extracted by a newly-proposed method from quartz, which are at present on view in the building. "These specimens are exhibited by Mr. Leicester, mining surveyor, and the plan by which the gold has been obtained consists of dry amalgamation from raw quartz, as contrasted with amalgamation conducted in a moist state, or from quartz which has been previously calcined. The gold extracted by each process is exhibited in a separate parcel in the case, each parcel being ticketed with a written statement of its history. We should state that all the experiments were tried upon equal quantities of the same quartz, previously crushed for the purpose, and then subdivided into parcels similar in weight. The first specimen consists of three little beads of gold obtained by smelting, and showing an average yield of 122 ozs. to the ton. The second is composed of fine gold obtained by dry mercurial amalgamation, and shows an average yield of 105 ozs. The next consists also of fine gold procured by the dry mercurial amalgamation from calcined quartz, and averages 75 ozs. 16 dwts. 16 grs. There is also a specimen of gold obtained from quartz by the action of electricity, but this is displayed rather as a matter of curiosity than with any practical view, as the system could not be advantageously pursued for the purpose of utility. The great point which Mr. Leicester contends for is, that by his proposed method of dry mercurial amalgamation he can extract from 50 to 100 per cent. more gold from the same stone than is procured by the methods at present in force—a proposition so startling that it is not wonderful to find it received with some incredulity. Mr. Leicester, however, speaks confidently on the point, and affirms that a 30-horse power engine, working at once a crushing, triturating, and amalgamating machine, could get through 4 tons of quartz per hour, or 40 tons per day of ten working hours, whereas by the present system the same engine would not get through more than 15 tons of quartz in a similar space of time."—Mining Record.

COTTER'S PATENT ORE-REDUCTION PROCESS.—We have been favoured by Dr. Cotter with the following specification of the cost and materials for carrying out the process invented and patented by him, and can only say that if his method of treatment proves as successful as he confidently assures us it will be, the advantages are likely to become most valuable for our mining community, and ought to be exceedingly beneficial to himself.—Estimated cost of plant:—

Bricklaying and materials .....	£100 0 0
Iron work .....	50 0 0
Carpenters' work .....	25 0 0
Batteries .....	15 0 0
Implements, &c. ....	10 0 0
Retorts for reducing the zinc .....	5 0 0
Superintendence .....	50 0 0
Incidental .....	50 0 0 = £305 0 0

NOTE.—The above figures have been obtained from tradesmen, with 15 per cent. added.—T. Y. C.

Cost of reducing 8 tons of 12 1/2 per cent. sulphate ores (crushed):—

Materials—Nitric E. I. (1 cwt.) .....	£ 0 10 0
Salt, common (1 cwt.) .....	0 4 0
Zinc (1 ton) .....	30 0 0
Lime (5 cwt.) .....	0 5 0
Fuel, including charcoal .....	0 10 0
Unforeseen .....	1 1 0 = £32 10 0
Labour—Two men at 5s., and two boys at 2s. 6d. ....	1 3 0

Total .....

Produce—One ton of copper, fine .....	—
Zinc (1 ton less 1 per cent) .....	£29 6 0
Salt (1 cwt.) .....	0 4 0
Potash, caustic (1 cwt.) .....	0 8 0
Lime, gypsum (5 cwt.) .....	0 5 0 = £30 3 0
Nett cost for 8 tons .....	3 10 0

Total .....

GREAT NORTHERN MINING COMPANY.—Some time ago we mentioned the probability of a very large yield of rich ore as destined to reward the English company for their spirited outlay and confidence. We now understand that their mines present fields of profitable labour to which it is not easy to assign limits, and that increased contentment is observable among the miners and others employed in that distant but not unprofitable part of the colony. When the last wool ship for the season shall have left Port Augusta the exports therefrom will have reached a figure rarely attained by a port for which so little has been done.—Bell's Life in Adelaide.

## SALES OF BLACK TIN.

BLACK TIN SOLD IN THE QUARTER ENDING DECEMBER, 1861.

Mines.	Tons.	Amount.
Carn Brea .....	197	£13,339 15 1
Charlestown United .....	92½	6178 6 8
St. Day United .....	36½	5674 3 7
Tincroft .....	82½	5619 6 8
Par Consols .....	77½	8257 14 2
West Fowey Consols .....	69¾	4792 9 5
Great Wheal Vor .....	60¾	4431 4 0
Drake Walls .....	62¾	4255 17 6
Wendron Consols .....	62¾	4208 4 8
Polberron .....	55¾	3911 1 5
Great Wheal Fortune .....	64	3401 4 6
Great Wheal Busu .....	41	2520 15 5
St. Austell Consols .....	26½	1821 17 7
North Roskear .....	25½	1709 15 7
Wheal Kitty .....	26½	1703 18 5
Budnick Consols .....	19	1286 14 5
Penhall .....	18	1258 1 5
Bottle Hill .....	12	1245 17 1
Garlidra .....	15½	1107 6 10
South Carn Brea .....	16½	1106 11 11
Brea Consols .....	14	982 5 7
Pen-an-drea .....	11	757 14 8
Polbreen .....	10½	729 8 1
Great Work .....	8½	703 5 8
Trevener and Trevenear .....	6½	438 11 9
Treworliss .....	6½	428 2 6
Gurlyn .....	5½	392 14 4
West Wheal Frances .....	5½	391 19 8
Wheal Sithney and Cannel .....	—	385 7 0



Redmoor	434	332	4	1
Kil Hill	434	290	16	3
Cudda	234	159	12	5
United (Tavistock)	134	125	7	1
Penhale Moor	134	102	6	7
East Providence	—	80	2	10
North Trekerby	—	67	15	6
East Wheel Lovell	—	66	10	0
Wheel Annie	—	53	18	6
West Far	—	49	14	3

## SALES OF LEAD ORES.

LEAD ORES SOLD DURING THE QUARTER ENDING DECEMBER, 1861.

Mines.	Tons.	Amount.
Miners.	114,921	15 0
Foxdale (late of Man)	690	10,940 0
Liaburne Mines	721 3/4	9,091 13 6
Dyllife	433	5,453 15 0
Wheel Mary Ann	283	5,306 18 0
Rhosmor	323	4,111 2 0
East Darren	220 3/4	3,276 0 2
Cwmystwith	234 1/4	2,917 14 8
Cwm Erfin	164 1/4	2,473 0 3
Cargoll	176	2,358 1 0
Westminster	155	1,948 17 6
Mont Pleasant	140	1,831 5 0
Maesyrwddu	137	1,728 7 0
Costa Llys	100	1,655 0 0
Laxey	100	1,348 10 0
Bryn Gwilog	100	1,250 0 0
Maesysafn	93	1,192 5 6
Parry's (Halkin)	110	1,155 9 0
Wheal Frank Mills	85	1,114 9 0
Orsedd	94 1/4	1,086 17 10
Nant-y	83	1,056 3 11
Roman Gravel	102 3/4	1,005 11 0
Dale	80	965 10 0
North Miners	75	945 0 0
Newtownards	90	900 0 0
Exmouth	65	881 12 6
Llanerchymaur	70	849 5 6
Deep Level	63	789 12 6
Tasau	47 1/2	779 9 0
Goginan	62 1/2	775 10 0
Dyngwyl	65	754 17 6
Keawick	60	652 17 6
Tyndrum	50 1/2	644 14 0
Carmanth United	52	637 12 3
Cefn Brynno	45	569 7 6
Long Rake	42	530 17 0
Wheal Wrey Consols	42	526 9 6
Hendre Ucha	23	404 17 0
South Darren	31 1/2	379 12 1
Rhosyrol	30	375 15 0
Pool Park	30	370 10 0
Aberdovey	28	339 3 6
Llangynog	26	294 11 0
Herward United	20	279 10 0
Holywell Level	23 1/4	276 3 6
Canara	20	274 0 0
Penpompren	20	250 10 0
Pant-y-Buarth	20	245 0 0
Brynmair	20	235 0 0
Clara United	18	222 12 0
Brynmor Hall	17	222 9 0
Pen-y-llyn	16	201 13 0
Grosvener	15	195 0 0
Brondyod	14 1/2	178 1 0
Nantes and Penrhif	11	146 10 6
Ty Maen	10	130 12 0
Speedwell	10	122 10 0
North Laxey	8	115 8 0
Cao Conroy	8 1/2	102 12 9
Bryntail	6	79 16 0
Chwael Las	1	50 10 0
Lochyside	4	48 0 0
Kilmorey	3	38 2 0
Lady Eleanor	3	37 5 6
Garreg	3/4	2 12 0
Gelfon	—	—

## BLEND.

Great Retallack	960	£1,352 0 0
Miners	230	502 14 0

## MILLS AND FORGES IN SOUTH STAFFORDSHIRE.

The following is a list of the mills and forges in South Staffordshire, with the number of puddling-furnaces at each. It will be seen that there are in operation 1782 puddling-furnaces, belonging to 78 different firms and 100 distinct works. They extend in one direction from Wolverhampton to Birmingham, a distance of 15 miles; and in another from Kidderminster to Cannock, or 25 miles:—

Furnaces.	Works.	Furnaces.
John Bradley and Co.	Stourbridge Works, Stourbridge	23
ditto	Brookmoor Works, ditto	38
ditto	Shut End, ditto	34=95
John Barnard and Sons	Imperial Works, Wednesbury	26
ditto	Lea Brook, ditto	28
G. B. Thorneycroft and Co.	Toll End and Gold's Hill, West Bromwich	31=85
ditto	Shrubbery Works, Wolverhampton	42
Chillingham Iron Company	Swan Garden, ditto	30=72
ditto	Chillingham Works, ditto	34
ditto	Lea Brook, Wednesbury	23
Barrows and Hall	Caponfield, Bilston	16=73
ditto	Bloomfield Works, Tipton	56
ditto	Factory Works, ditto	22
British Iron Company	Tipton Green Works, ditto	11=89
ditto	Congreaves, Birmingham	56
Jones and Murcott	Brierley Hill, ditto	18=74
John Davies and Son	Spring Vale, Bilston	61
Oster Bed Co. (Messrs. Sparrow)	Bromford Ironworks, West Bromwich	58
W. H. and J. Sparrow and Co.	Oster Bed, Wolverhampton	32=58
Philip Williams and Son	Blind Mill Works, Bilston	26
Thos. Walker and Co.	Great Bridge Works, Tipton	38
Earl of Dudley	Patent Shaft Works, Wednesbury	42
Henry Sparrow	Round Oak, Brierley Hill	45
Solly Brothers	Corbyn's Hall Works, Dudley	40
ditto	Lea Brook, Tipton	25
S. Groucutt and Sons	Great Bridge, ditto	18=43
ditto	Bradley Field Works, Bilston	33
E. B. Thorneycroft and Co.	Bankfield Works, ditto	20=53
ditto	Brantford Works, Oldbury	10
Gibbs Brothers	Great Bridge Works, Tipton	38
Brown and Frear	Staffordshire Ironworks, West Bromwich	12=39
ditto	Deepfields, Bilston	10
Walter Robinson and Co.	The Lays, Stourbridge	28
E. Creswell and Sons	The New Lays, ditto	10=38
Thomas Wells	Old Church, Tipton	27
Davis and Bloomer	Tipton Works, Tipton	20
David Jones	Moxley Works, Wednesbury	25
ditto	Felsall Works, Walsall	12
Plant and Fisher	Gold's Hill, Bilston	11=23
E. Page and Sons	Herbert's Park, Bilston	15
S. Mills	Bilston Brook, Bilston	8=23
Lee and Bolton	Dudley Port Works, Tipton	23
David Rose	Rosway Works, West Bromwich	22
Daniel Rose	The Green Ironworks, Darlaston	21
William Rose	The Hyde Works, Stourbridge	22
Wright and North	Albert Works, Moxley	21
ditto	Bradley Bridge, ditto	20
Isaac Jenks	Bakman's Hill, Bilston	10
Hall, Holcroft, and Pearson	Monmore Works, Wolverhampton	11
Thomas Silvester and Son	Cleveland Works, ditto	8=19
Millington and Co.	Minerva Works, ditto	13
Badger and Co.	The Level, Brierley Hill	17
Evans and Sons	Spon Lane, West Bromwich	12
N. Hingley and Sons	Summer Hill, Tipton	15
Hingley and Smith	Dudley Port Works, ditto	14
George Hickman and Co.	Netheron Works, ditto	17
John Wheeler and Co.	Hart's Hill Works, Brierley Hill	15
John Knight and Co.	New Groveland Works, Tivdale	30
Lloyds, Foster, and Co.	Brettle Lane, Stourbridge	16
J. F. Lloyd and Co.	Cockley Ironworks, Kidderminster	12
Deakin and Dodd	Old Park, Wednesbury	24
Eagle Coal and Iron Company	King's Hill, ditto	6
S. Whitehouse	Monmore Lane Ironworks, Willenhall	11
Lees and Holden	Ridgecote, ditto	10
R. Williams and Co.	Great Bridge, ditto	19
Sharp and Brown	Brick House Works, ditto	10
Webb, Thomas, and Sons	The Grove, Smethwick	6
J. Watkin	Bretwell Hall Works, Stourbridge	6
W. and G. Firmstone	Swindon Works, ditto	13
W. Glyn, sen. and Co.	Crookbay Works, West Bromwich	18
Marshall and Mills	Wedgway Works, Cannock	12
ditto	Monway Works, Wednesbury	10=22
Thomas Johnson, jun.	Victoria Works, Walsall	7
ditto	Church Lane, West Bromwich	10=17
Henry Lancaster	Waterloo Ironworks, ditto	7
Bissell and Keay	The Pickle, Walsall	12
Hipkins and Sons	Birchills, ditto	7
Weston and Grice	Victoria Works, West Bromwich	12
	Spon Lane, ditto	6

\* Makers of gun-barrel iron, by special appointment, to Government.

Hartland and Co.	Smethwick, ditto	8
T. Vernon	Oldbury, ditto	4
M. Morris, jun.	Park Lane, Tipton	3
J. Haines and Co.	Sheep Wash, ditto	10
Hunt and Sons	Brades Works, Oldbury	8
John Kimberley	Eagle Works, Oldbury	9
Whitehead and Haines	Globe Works, Tipton	6
Thompson, Hutton, and Co.	Boverux Works, Bilston	6
Thomas and Thompson	Bradley Hall Works, ditto	10
Hampton and Co.	Pot House Bridge Works, ditto	7
E. P. and W. Baldwin	Horsley Fields Works, Wolverhampton	3
ditto	Wildon Works, Kidderminster	8
James Williams and Co.	Whittington Works, Stourbridge	7
Banks and Morgan	Broadwaters, Kidderminster	5
Edmund Page	Crown Ironworks, Smethwick	12
Joseph Welch	Kibenez Works, Deepfields	11
Thomas Rose	Millfield Works, Bilston	12
Ambrose Beard and Sons	Regent Works, ditto	11
Brooks and Beck	Junction Works, Birmingham	6

Total 1782

The undermentioned works are at present standing:—Albion Works, West Bromwich 50; Highfield Works, Bilston, 26; Oak Farm, Dudley, 38; Moxley Works, Darlaston, 10; Old Groveland Works, Tipton, 13; Atlas Works, West Bromwich, 13; District Forge, Smethwick, 20; — West Bromwich, 3; Stonedfield Works, Bilston, 10; Brockmoor Works, Dudley, 6; Dudley Port Works, Tipton, 14.

—From Griffiths' Iron Trade Circular.

## COLLIERY INSPECTION—MANCHESTER DISTRICT.

The subjoined is the preliminary summary of the fatal colliery accidents, and also of the non-fatal explosions of fire-damp in the Manchester district during the year 1861:—

Collieries.	Owners.	Non-fatal explosions.	Separate fatal accidents.			Lives lost by the accidents.			Total fatal accidents.	Total lives lost	
			Explosions.	Falls of roof.	In shaft.	Explosions.	Falls of roof.	In shaft.			
Cilgerrig .....	Cilgerrig Coal Co. ....	2	1	1		1	1		1	2	
Worsley .....	Bradgewater Trustees ..	1	1	1		1	1		1	2	
Little Lever .....	Andrew Knowles & Sons ..	1	1	1		2	1		2	2	
Pendlebury .....	Ditto .....	1	2						2	2	
Peddleton .....	Ditto .....	1									
Agecroft .....	Ditto .....			1			1		1	1	
Clifton Moss .....	Ditto .....				1				1	1	
Radcliffe .....	Knowles and Hall .....	2							1	1	
Stonesloagh .....	Knowles and Scott .....		3	1		5	1		1	1	
Brookfield .....	John Speakman .....	1	1			1					
Cilgerrig and Kersley ..	Ellis Fletcher's Trustees ..	1	4	2		1	4	2	7	7	
Denton .....	Ditto .....	2	1								
Clough Side .....	Thos. Fletcher and Sons ..	1				1			1	1	
Bents .....	Thomas Fletcher .....	2									
Great Boys .....	Fletcher and Scowcroft ..	1									
Stand-lane .....	Stott and Pickstone .....	3	1			2			1	2	
Low Side .....	William Wrigley .....	2	1						1	2	
Burnley, &c. ....	J. Hargreaves's Execut. ....	1	1	1		3	1	1	3	3	
Coppull .....	John Hargreaves .....	2	3			3			3	3	
Lord's Fields .....	Lord's Fields Coal Co. ....	2	2			2			2	2	
Fairbottom .....	Leases and Booth .....		1	1		8	1		2	4	
Oak .....	Chamber Colliery Co. ....	1	1			1			1	1	
Rhodes Bank .....	Leases, Jones, and Co. ....						1		1	1	
Handie Hall, Tooker ?	James Dearden .....	1	1	1		1	1		3	3	
Hill, and Land ....	J. Stanley's Executors. ....	2	1			2			3	3	
Moston .....	James Hardcastle .....	1	1			1	1		2	2	
Harwood & Brightmet	Rosow and Lord .....	1	1			1			1	2	
Chadwick Hall .....	Ell Walsh .....	1				1	1		1	2	
Hey Fold .....	William Longworth .....	1	1			1			1	1	
Brinsop .....	William Hulton .....	1	1			1			1	1	
Halshaw Moor .....	Jethro Scowcroft .....	1	1			1			1	1	
Tonge .....	J. S. Milne and Co. ....	1	1			1	1		2	2	
Hanging Chadder and ?	Eccles Shorrock .....	1	1			1			1	1	
Low Compton ....	Samuel Scowcroft .....	1	1			1	1		2	2	
Entwhistle .....	E. Butterworth and Sons ..	1	1			1			1	1	
Kersley .....	Wm. Woods and Sons .....	1	1			1			1	1	
Crow Knowl .....	J. Brandwood's Execut. ....	1	1			1			1	1	
Scott Lane .....	James Stott .....	1	1			2			1	2	
Two Gates .....	James Collinge and Co. ....	1	1			1			1	1	
Unity Brook .....	T. Ramsbottom and Sons ..	1	1			1			1	1	
Glodwick .....	Limehurst Coal Co. ....	1	1			1			1	1	
Hirtle Dean .....	James Knowles and Co. ....	2				1			1	1	
Limehurst .....	Fisherwood and Watson ..		1				1		1	1	
Cockley Moor .....	Townsend & Hargreaves ..		1				1		1	1	
Small Hazels .....	John Fletcher and others ..	3									
Greave .....	John Gregory .....	1									
Atherton .....	James Diggle .....	1									
Snape .....	Samuel Wild and Co. ....	1									
Westleigh .....	S. Jackson and Co. ....	1									
Sholver .....	Francis Charlton .....	2									
Astley .....	Hulton Colliery Co. ....	1									
Wharston .....	Marland, Bailey, & Booth ..	2	1			1			1	1	
Hulton .....											
Bower .....											
Total .....		29	10	29	16	9	40	31	18	9	47

JOSEPH DICKINSON, Inspector of Mines.

## STATISTICS OF COLLIERY ACCIDENTS.

The following is a tabular statement of all the serious accidents that have occurred in the Northern Coal Field since the year 1658:—

Date.	Collieries.	Causes.	Lives lost.
1658-May	Gallow Flat, near Elswick	Inundated	unkn.
About 1710	Bensham	exploded	70 to 80
1743-Jan. 18	North Biddick	do.	17
1745-Jan. 18	Ravenworth	do.	16
1766-Mar. 18	Walker	do.	10
1766-April 16	South Biddick	do.	several
1767-Mar. 27	Fatfield	do.	39
1772-Dec. 6	A colliery near the Wear	do.	several
1778-Dec. 8	Dolly Pit, Chaytor's Haugh	do.	24
1793-Dec. 27	Hope Pit, Sheriff Hill	do.	14
1793-June 9	Rickleton Pit, near Pictree	do.	30
1793-June 9	Harraton	do.	28
1794-Dec. 21	Paradise, or West Pit, Benwell	do.	several
1795-April 24	Lumley	do.	13
1799-Oct. 11	Wallend	do.	35
1805-Oct. 21	Hebburn	do.	38
1805-Nov. 29	Oxclose	do.	10
1806-Mar. 28	Killingworth	do.	12
1809-Sept. 14	Killingworth	do.	92
1812-May 2	Felling	do.	24
1812-May 2	Herrington Mill Pit, Fenwick	do.	32
1813-Sept. 28	Hall Pit, Fatfield	do.	22
1813-Dec. 24	Felling	do.	11
1814-Aug. 12	Hebburn	do.	75
1815-May 3	Heaton Main	inundated	57
1815-June 2	Success Pit, Newbottle	exploded	18
1815-June 27	Sheriff Hill	do.	33
1815-July 31	Newbottle	boiler burst	33
1817-June 29	Row Pit, Harraton	exploded	27
1817-Dec. 18	Plain Pit, Rainton	do.	35
1819-July 19	Sheriff Hill	do.	25
1819-Oct. 9	George Pit, Lambton	do.	59
1821-Oct. 23	Wallend (Russell's)	do.	11
1823-Nov. 3	Plain Pit, Rainton	do.	34
1824-Nov. 19	Dolly Pit, Newbottle	do.	14
1824-Oct. 25	George Pit, Lumley	do.	11
1825-July 3	Judith Pit, Fatfield	do.	3